Municipal Facilities Operation & Management:

2.1.14 Water Systems

2.1.14.1 Introduction

This program component is applicable to the City Department that owns and operates the potable water supply and distribution systems for the citizens of San Diego. The goal of this component is to reduce the impact of water operations and maintenance activities on storm water quality and provide guidance for protection of water resources.

The water system for the City of San Diego is quite extensive and includes 3000 miles of pipeline, 45 pump stations, 3 treatment plants***,*** 32 potable water reservoirs, 9 raw water reservoirs and 8 groundwater basins. Some of the City's water resources (raw water reservoirs and ground water basins) are located outside the City limits. This system serves 1.2 million City customers and provides water and water storage to other municipalities and water districts in San Diego County.

The component contains storm water Best Management Practices for the water operations and maintenance activities and guidance for the protection of the Water Department's water resources, specifically surface water tributary to raw water reservoirs and groundwater. Storm water Best Management Practices are commonly referred to as Best Management Practices (BMPs) or Storm Water Practices (these terms may be used interchangeably).

The City's program must meet the requirements of the Municipal Storm Water Permit, as described in Table 2.1.14-1.

Table 2.1.14-1. Permit Requirements – Water Systems.

Section	***Requirement (Summary)***	***Municipal Permit Section***
2.1.14.2	Implement pollution prevention methods	F.3.a.(1)
2.1.14.2	Designate and implement minimum BMP's to protect water quality	F.3.a.(4)
2.1.14.2	Inspect areas and activities annually	F.3.a.(7)
2.1.14.2	Implement and designate an Educational Program for All Targeted Communities	F.4.a. F.4.b. F.4.c.
2.1.14.2	Develop a budget for storm water expenditures for each fiscal year covered by the Municipal Permit	F.8
2.1.14.4	Document activities for Jurisdictional Urban Runoff Management Program Annual Report	I.

The objectives of this program component are to:

- Review maintenance activities annually to verify that appropriate Best Management Practices (BMP's) are being utilized.
- Institute good housekeeping practices and create a Storm Water Pollution Prevention Plan for the Water Department's three (3) Treatment Plants.
- Report prohibited non-storm water discharges observed during the course of the normal daily activities so they can be investigated, contained and cleaned up or eliminated.
- Conduct routine maintenance and emergency repairs in a manner to minimize negative impacts to the storm drain conveyance system and receiving waters.
- Educate Department employees of pollution prevention techniques.
- Provide public outreach (i.e. external education - link water conservation with storm water pollution prevention)
- Protect the City's water resources (surface and groundwater).

2.1.14.2 Activities

Water operations and maintenance activities that may impact water quality include:

- Operation and maintenance of distribution lines, pressure regulating stations, potable water reservoirs and facilities.
- Operation and maintenance of transmission lines from the lakes to treatment plants.
- Water system operations (maintenance and repair).
- Treatment plant operations
- Reservoir maintenance.
- City recreational lakes program
- Water resource management (surface and groundwater)
- Water system construction (CIP Program) including: treatment plant expansions, construction of new water distribution lines (pipelines), reservoir repair and replacement and associated facilities (pump stations).

For more information about construction site requirements for the water system CIP program refer to Component 3.4 Construction Contracts.

<u>Water Operations</u>

Potential sources of pollution shall be identified for each activity. Department staff will consider hazardous waste sites and pollutants of concern in the receiving waters within the service area. Pollutants generated by operations that may be harmful in sensitive biological areas shall be identified. For example, a sediment discharge from a water

main break would be of particular concern if it occurs in the Peñasquitos watershed upstream of the Los Peñasquitos Lagoon, a 303(d) listed water body impaired for sediment.

Pollution prevention measures or good housekeeping shall be implemented and incorporated into Department operating procedures. Maps of sensitive biological areas, hazardous material sites, and pollutants of concern for receiving waters in the service area shall be created.

Storm water BMPs shall be implemented for operation activities to reduce pollutants from entering the storm water conveyance system. For example, potable water will be de-chlorinated to a level of non-detection prior to discharging and sediment control measures will be applied to trap the sediment that is transported by potable water escaping from the system.

Appropriate BMPs will be implemented for Water Operation activities that could affect water quality including:

Water main breaks
Hydrant breaks
Hydrant flushing
Main flushing
Highline and water wagons (temporary water services during construction and water main breaks)
Water Main Connections
Potable Water Reservoirs spills
Water Transfers between reservoirs
Raw Water Pipeline Blow Offs
Pump stations
Transmission and Distribution Lines
Water Meter Installations

Review of the Department activities will be conducted annually. The Department will evaluate its operation and maintenance procedures and make necessary changes to its procedures as needed to prevent pollutants from entering the storm water conveyance system. In addition, an annual report will be prepared and submitted to the Storm Water Pollution Prevention Program on the storm water activities conducted by the Water Department.

<u>Water Operations and Maintenance- Facilities</u>

An inventory of Department facilities will be prepared and will include water treatment plants, pump stations, potable water reservoirs, laboratory, training building, and

buildings and operations yards. The facilities will then be surveyed and a plan for each facility will be prepared to reduce and/ or eliminate pollution.

Pollution prevention and source control measures will be identified and implemented, such as good housekeeping practices, material and waste management, and spill control.

For each of the three water treatment plants, a draft Storm Water Pollution Prevention Plan (SWPPP) shall be created by October 1, 2002 and finalized by December 31, 2002. The SWPPP shall contain the following information:

Planning and Organization

The Department will designate a Qualified Person Contact at each treatment plant who is responsible for implementing the Storm Water Pollution Prevention Plan. The Contact Person shall be named in the Plan.

Site Map

Features on the site map must include:

- An outline of the entire property**,** the plant and any other permanent structures
- Drainage patterns on the property, including direction of flow
- Areas of soil erosion
- Nearby water bodies
- Location of storm water conveyance systems (ditches, inlets, storm drains, etc.)
- Location of existing permanent storm water controls (oil/ water separators, sumps, etc.). Sand bags are considered temporary.
- Location of “impervious” areas- paved areas, buildings, covered areas
- Locations where materials are directly exposed to storm water or urban runoff
- Locations where toxic or hazardous materials have spilled in the past
- Location of building storage and maintenance areas (e.g. garages, waste container area, wash racks, hazardous material storage areas, food container wash areas, port-a-potties, etc.)

List of Significant Materials

A list of materials stored and handled at the treatment plant including the location and typical quantities.

Description of Potential Pollutant Sources

- Provide a narrative description of the facility’s activities and list the potential pollutant sources and the potential pollutants that could be discharged in storm water discharges from each activity.

- List non-storm water discharges including the source, quantity, frequency, and characteristics of the discharges and drainage area.

- List of materials that have spilled or leaked in significant quantities since April 17, 1994. (If any).

Best Management Practices

- The treatment plant will develop a list of Best Management Practices (BMPs) that are currently implemented and those that will be implemented for all potential pollutant sources that could be discharged in storm water discharges at the treatment plant from each activity listed in the potential pollutant sources above.
- The department will conduct an annual inspection of treatment plant areas and activities in preparation for the Jurisdictional Urban Runoff Management Program annual report.

The SWPPP will be kept on site and made available upon request of a representative of the Storm Water Program.

Department facilities, buildings and operation yards will be inspected, documented, and reviewed annually by Water Department staff. All facilities will be assessed based on impacts to water quality and a list of Best Management Practices (BMPs) will be prepared for each facility. Based on findings of the annual inspection, actions will be initiated to change, amend and initiate operating procedures to improve the effectiveness of the BMPs.

- BMPs will include good housekeeping practices, use of storm water prevention materials such as fiber rolls, filtration systems, interceptor systems, and sediment control around catch basin inlets.
- BMPs will be evaluated to gauge their effectiveness based on their performance, ease of operation, applicability and cost.
- BMPs will also be developed to reduce the contribution of pollutants associated with the application, storage and disposal of pesticides, herbicides and fertilizers from Department facilities.

An Annual report will be prepared and submitted to the Storm Water Pollution Program on the activities conducted by the Water Department, which will include information on the operation and maintenance of City water system facilities.

Reporting of Discharges

The Water Department will report incidences of non-compliance that pose a threat to human and environmental health to the Regional Board Municipal Storm Water Permit contact and the Storm Water Program. The reports will be made verbally within 24 hours of discovery and follow up in writing within five (5) days, if needed. The Storm

Water Program will develop a standard form to be used by all City departments to ensure consistency and facilitate clear communication with the Regional Board.

The Water Department will track and record non-storm water discharges which do not cause a significant source of pollutants to the Waters of the United States and are not to be prohibited by the Storm Water Permit. This shall include rising ground waters, springs, diverted stream flows, uncontaminated ground water filtration, uncontaminated pumped groundwater, water from crawl space pumps, water line flushing, landscape irrigation, and discharges from potable water sources (other than water main breaks).

The Water Department will also track and record water main breaks. Only those water main breaks which cause a threat to human and environmental health will be reported.

Mapping:

The Water Department will map using GIS the locations of all discharges in order to assist in preparing and submitting Department activities for the annual Urban Runoff Management Program report. Also, maps will be prepared to show sensitive biological areas, hazardous materials sites and a list of pollutants of concern in the receiving waters affected by Department operations.

Water Resource Protection - Surface Water (Lakes) and Groundwater

The Department will work cooperatively with Municipal Storm Water Copermittees in the development of watershed Urban Runoff Management Programs to protect surface water and groundwater resources. Department activities will be coordinated with the Storm Water Pollution Prevention Program.

Surface Water (Lakes)

Pollution prevention, source control and structural BMPs will be implemented to protect the City's drinking water supply. These measures shall be documented in Department operating procedures for maintenance.

BMP's will be designated for certain improvements and activities at the lakes and include:

- Dams and Outlet towers
- Vaults and Manholes
- Paved surfaces
- Dirt surfaces
- Raw Water Blow-offs
- Diversion ditches
- Lake buildings and houses (Reservoirs Keepers)
- Sewage containment and collection
- Boat fueling
- Boat cleaning

- Dock cleaning
- Landscape and vegetation control
- Picnic areas
- Trash facilities
- Illegal dumping
- Water Transfers between reservoirs

Inspection of Lakes, facilities and activities will be conducted annually. Based on the findings of the annual inspections, the Water Department will implement follow up actions to change, amend or initiate its operating procedures to increase BMP effectiveness. Lakes Program storm water activities will be included the report submitted to the Storm Water Program by the Department. The activities required by Municipal Storm Water Permit are limited to those within the City of San Diego limits.

Groundwater

The Water Department desires to protect its interests in groundwater resources for the development of water supply and storage. In some cases, the City's interests extend beyond City of San Diego limits. The Water Department intends to be active in the review of storm water BMP selection and standards (with particular attention to infiltration BMPs, because of their potential to degrade groundwater resources.) The Water Department will work with the City and other jurisdictions as pollution sources and groundwater basin supply and storage priorities are identified.

Although not a part of the City's Urban Runoff Management Program, the Water Department plans to develop and implement one or more Groundwater Protection Plan(s) for groundwater basins during the course of Storm Water Permit implementation. The Plan or Plans will establish site specific monitoring programs, where appropriate, to assess impacts of Storm Water Permit implementation on the water quality of the basins or basins. In particular, monitoring programs will be utilized to evaluate the use of a combination of
BMP's where storm water is discharged and percolated into groundwater basin supply and storage areas. For example, combination BMP's could include natural vegetative type processes, catch basins with filters, avoidance of use of high toxic chemicals, use of slow release fertilizers to reduce nitrate load in runoff and use of pesticides with low water solubility.

The City's groundwater basins will be monitored on an ongoing basis to determine the water quality condition. Source of pollution will be traced if possible to identify the response party. Information will be provided to the City's General Services Storm Water Division or City Attorney for enforcement against the responsible party. More information about enforcement methods is included in Component 1.3 Enforcement of Storm Water Ordinance.

Groundwater activities will be included in the annual report submitted to the Storm Water Program by the Water Department.

Education & Training

1. Internal/Municipal Education:

The City of San Diego plans to conduct two levels of education and training for staff: General and Activity Specific. All staff will receive a basic introduction to the issue via a "General Storm Water" workshop created by the General Services Storm Water Pollution Prevention Program. Additionally, those departments or work groups that perform work activities specifically identified in, and affected by, the Permit will create and execute and fund Activity Specific training sessions to introduce new work processes, functions and behaviors that incorporate the Best Management Practices (BMPs) necessary for staff to prevent illegal discharges into the City's storm water collection and conveyance system and recreational waters. Additionally, the Departments will fund the External Education and Outreach elements in this plan. All education and outreach covered by the permit shall contain the phrase, "Another City of San Diego Think Blue Program protecting our beaches, bays and watersheds."

A) General Storm Water Training:

The General Storm Water workshops, while created by the Storm Water Program, are primarily being given by trainers to the staff of their respective departments. And, Items 2,3,4,5 and 6, below, are the educational materials created for the workshops. A "Train the Trainer " workshop was also created and given by the Storm Water Program (Item 7) to familiarize the trainers on the material and subject matter prior to rolling out the General Training workshop to their department staff.

Table 2.1.14-2. Storm Water Program General Training.

ITEM	AVAILABLE
1. Clean Water Leader/3-Cs BMP Reference Card	July 2001
2. General Strom Water Training Video	October 2001 To be completed by June 2002
3. City Employee Brochure	October 2001
4. Stop Pollution Pad	October 2001
5. Employee Knowledge & Behavior Survey. To be given before and after each General Storm Water Workshop by department trainers	October 2001
6. Frequently Asked Questions for department Trainers	October 2001
7. Train the Trainer Sessions. Training of department trainers on content and materials for the General Strom Water Workshops	September 10-14, 2001
8. Storm Water Newsletter	July/August 2002*

**** Note that Items 1 through 7 occurred in FY 2002 for city-wide distribution, and that Item 8 is slated for Fiscal Year 2003 and reflects an estimated available date.***

B) Activity Specific BMP Training(s):

Activity Specific BMP Training(s): the following training will be provided by the Water Department Training Section and include activity specific trainings and workshops with video component, binders on activity specific BMPs and field application/demonstration of the classroom and tailgate training sessions.

Table 2.1.14-3. Water Department Activity Specific Training.

ITEM	AVAILABLE
1. Department Engineers & Consultants, Field Personnel and Supervisors and lakes, facilities and treatment personnel.	December 2002
2. New Employee Training as needed via Tailgates, videos and filed training from supervisors	January 2003
3. All-staff and consultants to be given refresher course and updated curriculum and BMPs	June 2005

Note: the completion dates listed are estimated. Actual completion dates may vary depending upon other program factors.

Training for Supervisors and Field Personnel will include:

- Introduction to Storm Water Pollution Prevention
- Review of Department Instructions on Storm Water Pollution Prevention
- Review of San Diego Regional Water Quality Control Board regulations on Storm Water and Urban Runoff.
- Introduction to Best Management Practices of Storm Water Pollution Prevention.
- Video Training

Short List of Equipment and Materials to be used for Best Management Practices:

- Water Department Employees will be given instruction on the proper use of dechlorinator /diffuser units.
- Introduction to use of Fiber rolls: Water Department Employees will be given instruction on the proper installation and removal of Fiber rolls.
- Chlorine Residual test kits

C) External Education and Outreach:

The Water Department will be reaching out to the following targeted communities as appropriate: Municipal Departments and Personnel, Construction Site Owners and Developers, Industrial Owners and Operators, Commercial Owners and Operators, Residential Community, General Public and School Children and Quasi-Governmental

Agencies and Districts (i.e., Educational Institutions and Water and Sanitation Districts). Each of the communities will be addressed separately.

Table 2.1.14-4. External Education and Outreach

ITEM	AVAILABLE
1. Training and Education of Project applicants, contractors, and other audiences as appropriate	September 2003
2. Collaborate with City Departments and the General Services Storm Water Program on shared target audiences as appropriate	June 2005
3. Water Resources Brochure	October 2002
4. Newsletter on water resources & conservation	October 2002
5. Surface & Ground Water Resources brochure	October 2002
6. Training brochure on reporting of water breaks a & erosion in the Right of Way	October 2002
7. Brochure on CIP & Storm Water Compliance for Contractors	October 2002
8.Water Conservation & Ground Water brochure for contractors	October 2004
9. Landscape & Proper use of Pesticides with Environmental Services and the Park and Recreation Departments	October 2004
10. Jointly develop radio and TV ads on: a. Water conservation b. Water resource protection c. Landscape& irrigation d. Pesticides, herbicides and fertilizers e. Pet waste With the General Services Storm Water Program	May 2004
11. Establish & Publicize the Water Main Break Hotline	May 2002
12. School Outreach materials on Resource Protection (video and materials)	October 2003
13. Amend existing Speakers bureau presentation materials to incorporate storm water pollution prevention messages	December 2003
14. All CIP projects shall include information about storm water measures used at the site. The purpose is to inform residents of the importance of leaving certain measures in place during a rain event.	October 2003
15. Incorporate storm water messages and watershed protection information to Water Dept. Public Information Booth (materials & signage). 16. Promotional Materials for City Lake's users	October 2003 October 2002

Note the completion dates listed are estimated. Actual completion dates may vary depending upon other program factors.

Some of the educational activities, materials, outreach efforts and outreach tools discussed in this section will be designed for more than one targeted community while others will be for one specific targeted community.

2.1.14.3 Phasing

Year 1 (July 1, 2001 – June 30, 2002):

- Prepare/Implement education program
- Implement existing and new activities that are considered storm water best management practices

Year 2 (July 1, 2002 – June 30, 2003):

- Implement Year 2 storm water BMPs
- Prepare SWPPP's for the three water treatment plants
- Prepare projected storm water budget
- Conduct education activities
- Prepare & submit annual activities report
- Prepare maps for sites with environmental constraints
- Assess SWPPPs, revise budget

Year 3 (July 1, 2003 – June 30, 2004):

- Implement Year 3 storm water BMPs
- Conduct education activities
- Prepare & submit annual activities report
- Assess SWPPPs, revise budget

Year 4 (July 1, 2004 – June 30, 2005):

- Implement Year 4 storm water BMPs
- Conduct education activities
- Prepare & submit annual activities report
- Assess SWPPPs, revise budget

Year 5 (July 1, 2005 – June 30, 2006):

- Implement Year 5 storm water BMPs
- Conduct education activities
- Prepare & submit annual activities report
- Assess SWPPPs, revise budget

Actual implementation of the activities listed above is dependent upon identification of funding in future yearly budgets and City Council approval.

2.1.14.4 Annual Assessment

The following form is representative of the quantitative and qualitative measures that will be tracked by the Storm Water Program regarding the Water Systems component in order to prepare the Jurisdictional Urban Runoff Management Program annual assessment. ***These assessment factors and questions are presented for information only; some questions may be modified prior to each annual assessment period, and not all of the factors or questions below may apply to each component's responsible department(s)***. Prior to each fiscal year, a tailored Annual Assessment Form will be distributed to responsible departments, and will include an Excel spreadsheet containing direct and indirect quantitative and qualitative measures similar to the example below. The Storm Water Program will provide a blank copy of the Annual Assessment Form and additional guidance to department management prior to the beginning of each fiscal year. Submission of this report will require department director approval.

Program Assessment Form - Municipal Facilities Operations and Management – Water Systems

QUANTITATIVE ASSESSMENT:

Activity	Quantity	Units	Comments
Number of high priority municipal facilities		#	
Number of high priority municipal facilities targeted for inspection		#	Due to calendar-year vs. fiscal year, staffing, budget, etc., as well as Permit Section F.3.b.(6)(d), the number of sites targeted for inspection may be less than the actual number of sites.
Number of high priority municipal facilities inspected		#	Number of sites (not the number of inspections, which may or may not be the same).
Number of medium and low priority municipal facilities inspected		#	See above.
Quantity of material removed from MS4		tons	direct measure; report in tons.
Quantity of debris removed that could have enter MS4 (i.e. street sweeping, litter removal)		tons	direct measure; report in tons.

QUALITATIVE ASSESSMENT:

1. Describe the major accomplishments of this component over the past year.

2. Summarize the educational and outreach activities conducted for this component over the past year to educate staff on water quality principles.

3. Summarize new activities or improvements to be implemented next year as a result of your self-assessment.

4. Other comments.

FINANCIAL ASSESSMENT:

Estimated annual storm water expenditures:

Personnel Expenditures: _____

Non-personnel Expenditures: _____